perfect in this respect it is at any rate more perfect than any other substance.

We can have now a very clear conception of what takes place when we heat a body such as coal. At first it gives out a spectrum consisting of rays, all of which are less refrangible than those of the visible spectrum. Soon, however, as the coal continues to rise in temperature, it not only increases the number of such rays but takes on others of a more refrangible nature, entering into the visible spectrum when it begins to be red-hot.

Thereafter it pushes its way further and further into this spectrum, taking on successively yellow and green rays, blue, violet, and actinic rays as the temperature still rises, until at length it shines forth with the lustre of the electric light or of the sun.

Let us now proceed to reply to the fourth question, What is meant by a hot body? At first it was supposed that heat was a substance possessing mass but not weight, an imponderable, as it was termed, which insinuated itself between the particles of bodies, thus causing them to expand. This substance was further supposed to be rubbed out by friction and beaten out by percussion. It will be perceived that we have here a corpuscular theory of heat very similar to that of light, the one forming indeed the natural sequel to the other. The experiments of Davy, in which two pieces of ice both below 0° were made to melt one another by their mutual friction, and those of Rumford, made in boring cannon, sufficed, in the course of time, to convince physicists that heat cannot be a substance, inasmuch as the melting of the ice in Davy's experiments, and the heat produced in those of Rumford, would equally imply the creation in large amount of the matter of heat. It was therefore concluded by both these experimentalists that heat is not a substance but rather a species of energy. That is to say the only difference between a hot body and the same body when cold is that, in the former state the molecules of the body are in violent motion backwards and forwards, while in the last state this kind of motion is much less. This is the dynamical theory of heat at present universally held. In it heat is regarded as a kind of energy, so that when heat is produced by friction or percussion, a certain quantity of visible energy disappears from the universe, while at the same instant an equivalent quantity of heat-energy appears, or is created.

A little reflection will, however, show us that there is not here any *real* creation or annihilation, but merely the simultaneous disappearance of one kind of energy and the appearance of another; in fact, nothing more than a transmutation of energy. Joule was the first to prove the definite mechanical relation that exists between the visible energy which disappears and the heat which is generated, and according to his experiments, if a pound of water were to fall from a height of 772 feet under gravity, and if all its visible energy on reaching the earth could at once be converted into heat, the water would be found to have risen 1° Fahr. in temperature. It will at once be recognised that just as the material or corpuscular theory of heat fits into the corpuscular theory of radiant light, so does the dynamical, or energetic theory of heat fit into the undulatory or wave hypothesis. We may, in fact, imagine the little particles or molecules of heated bodies to be in a state of continual vibration resembling in this respect a bell, or the string of a musical instrument, except that their vibrations are much more rapid than those which constitute sound.

And just as the vibrations of a bell are carried off by the gaseous medium, *i.e.* the air which surrounds the bell, and ultimately affect our ear, producing the sensation of sound, so are the vibrations of molecules carried off by a medium (the ether) which surrounds them and ultimately affect our eye, producing the sensation of light. This train of thought enables us at once to reply to our fifth question, and to assert that there is a definite mechanical relation between the amount of heat which leaves a hot body as it cools, and the radiant energy which accompanies the act of cooling. And this definite mechanical relation may be stated in very simple language. If, for instance, a pound of water cools through 10° Fahr. then the radiant energy which it gives out in the process of cooling, if this should be made to impinge upon another pound of water, and be entirely absorbed by it, would heat it through 10°, so that while the one pound of water has become 10° cooler the other has been raised an equal amount in temperature.

We are now in a position to reply as follows to the questions proposed:

(1) Radiant light consists of an undulatory motion in a medium called ether.

(2) It moves with the velocity of 187,000 miles per second.

(3) Radiant heat is physically similar to radiant light, the only difference being that its wave length is greater, and its refrangibility less than those of light.

(4) A hot body is one whose molecules are in rapid motion.

(5) There is an equivalence in energy between the amount of radiant light and heat emitted by a hot body and the sensible heat which the body loses. Radiant light and heat may be termed *radiant energy*.

Without pretending to enter here into a philosophical discussion it is instructive to notice that all of these questions which were capable of being answered in two ways were answered wrongly at first.

Although this procedure of the human mind has delayed the correct solution of a very important series of questions, yet we in the present age cannot reasonably complain of what has taken place. It has given us a confidence in our present views that we could hardly have had if the question between two alternative views had not been threshed out in the past.

We can thus look to the future without dismay, and need not fear the gradual rising into strength of a school which shall call in question any of the very important conclusions at which we have now arrived.

Surely there is an advantage in being wrong first and right afterwards, especially when it was a past generation who went wrong and we ourselves who are right!

BALFOUR STEWART

(*To be continued.*)

NOTES

WE understand that Prof. Huxley, P.R.S., has agreed, at the request of the Lords of the Committee of Council on Education, to continue to act as Dean of the Normal School of Science and Royal School of Mines at South Kensington, and also to be responsible for the general direction of the biological instruction therein.

THE Senatus of the University of Edinburgh resolved at its last meeting that a lectureship of comparative embryology be instituted, and appointed Mr. George Brook, F.L.S., as lecturer, subject to the approval of the University Court. Mr. Brook has for some time been engaged in making investigations for the Fishery Board for Scotland.

THE Indian *Civil and Military Gazette* writing of the ornithological collection presented by Mr. Allan Hume of the Civil Service of India to the British Museum, says that its value and extent are only now beginning to be realised. It amounts to 62,000 skins of all kinds, and it has cost Mr. Bowdler Sharpe, of the Natural History Department of the British Museum, more than three weeks of uninterrupted labour to pack and send it away. Even now the work is not at an end, for the collection of eggs, which is no insignificant one, remains to be despatched. The gift, which represents the labour and learning of a lifetime

is described by Mr. Sharpe as "the grandest collection of birds ever made."

FROM the Seventh Annual Report of Examinations in Technology, under the direction of the City and Guilds of London Institute for the Advancement of Technical Education, we notice that there is again a fair increase in the number of candidates who presented themselves, and a satisfactory proportional increase in the number of those who have passed. In 1884, 3,635 candidates were examined, of whom 1,829 passed. In 1885, 3,968 candidates were examined, of whom 2,168 have passed. Thus the increase of passes is six more than the total increase in the number of candidates. There is a slight falling off in the number of subjects in which the examinations have been held, owing to the fact that in four of the subjects, viz. :—Salt Manufacture, Oils and Fats, Silk Manufacture, and Mechanical Preparation of Ores, the number of candidates was below the minimum for which an examination is held. Applications for examination were received, however, in 46 out of the 47 subjects included in the programme. From the returns furnished in November last, it appears that 6,396 persons were receiving instruction in the registered classes of the Institute, as compared with 5,874 in the previous year. These numbers do not include the students in attendance at the technical classes of various schools and colleges at which the Professors do not accept payment on results. Two new subjects were this year added to the list, viz. :—Boot and Shoe Manufacture and Framework Knitting, in which subjects 69 candidates and 40 candidates respectively presented themselves. Nearly all these candidates received instruction in the recently-opened Technical School at Leicester. The percentage of failures on the results of the examinations in all subjects has decreased from 49·7 in 1884 to 45·3 in 1885. The proportion of failures is still large, showing the necessity of better instruction on the part of the teachers, and of more careful and sustained work on the part of the students. Of the inability of the majority of the candidates to make intelligible sketches, the examiners continue to complain; but it is hoped that this defect in the education of artizans will gradually be remedied as linear drawing comes to be more generally taught in our public elementary schools. During the past session, 263 classes have been held in different parts of the kingdom in connection with the Institute's examinations. Of the 6,396 students in attendance at these classes, 3,271 presented themselves for examination, and that of these 1,670 succeeded in satisfying the examiners. Last year, the number of candidates who passed from the registered classes of the Institute was 1,387, showing an increase of 283, which is a large proportion of the total increase, viz., 333 of successful candidates. This year, for the first time, Manchester heads the list of provincial centres from which the largest number of candidates have passed, the number being 147 as against 115 last year. A like number of candidates have passed from the Polytechnic Institution, London. Next in order of merit comes Glasgow, with 119 as against 139 last year, Bradford with 97 as against 90, Leeds with 84 as against 70 (55 from the Yorkshire College), Bolton with 75 as against 98, and Huddersfield with 72 as against 39. It is expected that about 750 of this year's successful candidates will gain a full Technological Certificate, in virtue of their having obtained from the Science and Art Department the necessary qualifying certificates in Science, in addition to their certificate in Technology. Of the 1,829 candidates who passed last year, 566 obtained the full certificate. This increase of 184 in the number of full certificates is a very satisfactory feature in this year's examinations. Compared with the total number of successful candidates, the percentage of those to whom full certificates will be awarded has increased from 31·2 to 34·5. From year to year, improvements suggest themselves in the working of these examinations, by which they are rendered more practical, and at the same time better adapted to the requirements of the students. The opening of the Central Institution, by affording new facilities for the training of technical teachers, will, it is hoped, do much towards improving the character of the instruction in the Institute's classes in connection with these examinations. Summer Courses for teachers, to be continued in subsequent years, have this year been held for the first time at the Central Institution, and the applications for admission to these courses show that the value of the instruction is likely to be fully appreciated by those for whom it is intended.

THE death is announced, at the age of fifty-five years, of Mr. Robert F. Fairlie, the well-known engineer; and also of Dr. Heinrich Wilhelm Reichardt, Professor of Botany in the University of Vienna.

AT the annual speech day at Reading School, on Tuesday, July 28, a new laboratory was opened by Dr. J. H. Gladstone, F.R.S. The Town Clerk (Mr. H. Day) read a statement to the effect that natural science had been taught in the school since the year 1872, but up to 1884 no adequate class-rooms had been fitted up or set apart for that purpose, except in a temporary way. Last year the Head Master submitted a scheme to the Trustees, and after the subject had been fairly thought over, three gentlemen, Messrs. G. W. Palmer, Alfred Palmer, and Walter Palmer, sons of the Member for Reading, volunteered to provide the accommodation recommended by Dr. Walker. The trustees gladly availed themselves of so generous an offer, and the result was that the school now possessed in that room—fitted up for chemical analysis, and in the adjacent lecture-room—excellent means of giving instruction in the usual branches of natural science. Dr. Gladstone then declared the laboratory open. Having praised its general arrangements, he congratulated the school on having obtained so magnificent a gift from the Messrs. Palmer, who were thus endeavouring to place chemistry upon an equal footing with the other studies carried on at that school. He would not go into the great controversy between things and words, but they would all agree that it was necessary that the knowledge of things should precede the knowledge of words, because the knowledge of words was only a kind of simulacrum unless the knowledge of things preceded it. A knowledge of chemistry was pre-eminently an experimental science, and they wanted that kind of training for all boys. Different studies gave a different training to the mind, and chemistry gave a training not only to the perceptive faculties, but also to the reasoning processes, and therefore chemistry had been wisely chosen to take an important part in the curriculum of that school.

THE foundation stone of the new buildings of the Sorbonne, which are to cost 22 millions, was laid on Monday by M. Goblet, French Minister of Education. The cellars and ground floor have already been built.

THE protracted season of midsummer heat throughout the United States has been broken, the *Times* correspondent states, by a series of drenching rains, accompanied by cyclones. A severe easterly storm began on Sunday, continuing throughout Monday, the wind changing to westward, and rains deluging the entire country east of the Mississippi. The heaviest rainfall, which was at Chicago, reached 5½ inches in the twelve hours ending Sunday at midnight. A universal report from all parts of the country tells of the vast damage done by the floods and cyclones. The rainfall on Monday evening at Philadelphia was nearly 3 inches. The cyclone started in Maryland about two o'clock on Monday afternoon, passing northward along the eastern border of Philadelphia at three o'clock. It wrecked houses and mills and destroyed cattle and crops in Maryland and Delaware, doing the severest injury along the Delaware river front of Philadelphia. Passing from south to north, a low, black, revolving ball of smoke moved at the rate of nearly a

mile in a minute, crossing twice over the Delaware River, which is crescent-shaped. Five lives have been lost, six persons are missing, and about 100 injured. The damage done is estimated at half a million of dollars. Six hundred buildings were unroofed and the walls partly destroyed, railway cars blown from their tracks, trees uprooted, and several vessels wrecked. Two steamboats on the river had their upper works lifted off and destroyed, the pilot of one being drowned, while from the deck of another horses and a waggon were lifted by the wind and dropped into the river.

THE Government Astronomer of Hong Kong has published a notice with regard to typhoons, from which it appears that the earliest signs of these phenomena in the China seas are clouds of the cirrus type looking like fine hair, feathers, or small white tufts of wool travelling from east to north, a slight rise in the barometer, clear and dry but hot weather, and light winds. These are followed by a falling barometer, while the temperature rises still further. The air becomes oppressive from increasing dampness, and the sky presents a vaporous and threatening appearance. A swell in the sea, and also phosphorescence of the water, as well as glorious sunsets, are other signs useful to the mariner who is acquainted with the usual conditions in the locality. When the typhoon is approaching the sky becomes overcast, the temperature in consequence decreases, the dampness increases, and the barometer falls more rapidly, while the wind increases in force. Nearer the centre the wind blows so that no canvas can withstand it, and the rain pours down in torrents, but there is no thunder and lightning. Still nearer the centre there is less wind and rain, and the sky is partly clear, but the sea is tremendous. This is therefore the most dangerous position. Typhoons may be encountered in any season of the year, but are most frequent in August and September. They appear to originate south-east of the Philippine Islands. In August and September they frequently pass east of Formosa, or travel towards north-west up through the Formosa Channel, or strike the coast of China. Afterwards they usually recurve towards north-east and pass over Japan or across the sea north of Japan, but not with the violence that is characteristic of tropical storms. During the remainder of the year they most frequently cross the China Sea from east to west.

A TELEGRAM from St. Petersburg, dated August 3, states that despatches from Tashkend and Verny announce that there has been a severe earthquake at Pishpek (? Bish-uzek), damaging all the houses at that place. The shock extended to the settlements of Sukuluk and Belovodsk, which were laid in ruins. At Belovodsk a church fell in, many of the congregation assembled in it at the time being killed. Numerous fissures appeared in the ground. A later telegram from Verny reports that altogether fifty-four people were killed and sixty-four injured by the earthquake at Belovodsk and Karabolty. The shocks continue and the people are terror-stricken.

A TELEGRAM from Malaga states that a shock of earthquake occurred at Motril on the afternoon of July 30.

THE *Times* states that much uneasiness is being caused by the continued absence of tidings as to Mr. F. A. Gower, who lately carried on a series of experiments with a view to testing the adaptability of balloons to war purposes. Mr. Gower, who is well known to the scientific world as a joint patentee of the famous Gower-Bell telephone, had made Hythe the centre of his operations, and thence made several ascents. His final undertaking in this country was a successful aërial voyage across the Channel early in June. He continued his trial trips in France, and met with a misadventure while awaiting an opportunity of returning in a balloon to England. Undeterred by this, he made an ascent on July 18 from Cherbourg, and since that date nothing definite is known of his whereabouts. A pilot balloon which he had previously despatched has been found and sent on to Hythe; and a balloon has been picked up without a car some thirty miles off Dieppe. Sixteen days having now elapsed since the ascent and no message having been received from Mr. Gower, whose invariable practice it was at once to notify by wire his safety at either Cherbourg or Hythe, at both of which places he has left property, the gravest fears are entertained that he has been drowned. It may be mentioned that the experiments being carried on by Mr. Gower were within the cognisance of the Government, and have so far, it is believed, proved of a very satisfactory character.

ACCORDING to *Science* the daily papers announce that the U.S. commissioner of agriculture has established as a part of Riley's division a branch of investigation relating to economic ornithology, and has appointed Dr. C. Hart Merriam, a well-known ornithologist and secretary of the American Ornithologists' Union, a special agent to take charge of this part of the work. Dr. Merriam will make his headquarters at Sing Sing, N.Y., until Oct. 1, and after that at Washington. The scope of the investigation will cover the entire field of inter-relation of birds and agriculture, particularly from the entomologist's standpoint. The inquiry will relate primarily to the food and habits of birds, but will include also the collection of data bearing on the migration and geographical distribution of North American species. In this last inquiry the department hopes to have the co-operation of the Ornithologists' Union, Dr. Merriam being at the head of the Union's committee on migration.

DR. ELKIN, in charge of the heliometer of the Yale College observatory, has, *Science* says, been engaged for nearly a year and a half past in measuring the group of the Pleiades, his original plan being to measure with this instrument the same stars which Bessel measured with the Königsberg heliometer about fifty years ago. Dr. Elkin has taken advantage of all the improvements in the instrument and the methods of using it which have been developed in the last half-century; and, in addition to the successful carrying-out of his carefully elaborated plan of triangulation, he has also been able to extend his work to a large number of stars which Bessel did not measure. The position-angle and distance of the Bessel stars from the large star Alcyone are included in the work. The results of this very valuable work cannot be fully discussed and prepared for publication until the positions of certain stars of reference have been obtained from the work of other observatories where they are now being determined. Dr. Elkin has also obtained measures of the distances of a number of craters on the moon from neighbouring stars on thirty-six nights, near the times of first and last quarter. The positions of these craters on the moon itself had been determined; also series of measures made of the diameters of Venus, of the outer ring of Saturn, and of the satellite Titan referred to its primary. A registering micrometer has been devised, and, in the form constructed by the Repsolds, has proved a complete success, greatly increasing the amount of work which the observer can accomplish. Dr. Elkin proposes to devote the heliometer for a year and a half to come to investigations in stellar parallax. The plan of research mapped out and already commenced will, it is hoped, if carried to completion, furnish a reliable value of the relative parallax of stars of the first and eighth magnitude.

PROF. A. LANDMARK, chief director of the Norwegian Fisheries, has published some interesting particulars of his studies of the capability of salmon to jump waterfalls. He is of opinion that the jump depends as much on the height of the fall as on the currents below it. If there be a deep pool right under the fall, where the water is comparatively quiet, a salmon

may jump 16 feet perpendicularly; but such jumps are rare, and he can only state with certainty that it has taken place at the Hellefos, in the Drams River, at Haugsend, where two great masts have been placed across the river for the study of the habits of the salmon, so that exact measurements may be effected. The height of the water in the river of course varies, but it is as a rule, when the salmon is running up stream, 16 feet below these masts. The distance between the two is 3½ feet, and the Professor states that he has seen salmon jump from the river below across *both* masts. As another example of high jumping, he mentions some instances of Carratunk waterfall, in Reumbec, in North America, where jumps of 12 feet have been recorded. Prof. Landmark further states that when a salmon jumps a fall nearly perpendicular in shape it is sometimes able to remain in the fall, even if the jump is a foot or two short of the actual height. This, he maintains, has been proved by an overwhelming quantity of evidence. The fish may then be seen to stand for a minute or two a foot or so below the edge of the fall in the same spot, in a trembling motion, when with a smart twitch of the tail the rest of the fall is cleared. But only fish which strike the fall straight with the snout are able to remain in the falling mass of water; if it is struck obliquely, the fish is carried back into the stream below. This Prof. Landmark believes to be the explanation of salmon passing falls with a clear descent of 16 feet. The professor believes that this is the extreme jump a salmon is capable of, and points out that, of course, not all are capable of performing this feat.

IN the new part of the *Transactions* of the Essex Field Club (vol. iv. part 1) the first and perhaps most interesting paper is Prof. Boulger's presidential address on the "Influence of Man upon the Flora of Essex."

ACCORDING to the *Chinese Recorder*, Dr. Wallace Taylor, a missionary doctor of Osaka, Japan, has made important discoveries regarding the origin of the disease *kakké*, or *beriberi*, as it is known in Ceylon. He traces it to a microscopic spore, which is often found largely developed in rice, and which he has finally detected in the earth of certain alluvial and damp localities.

WE have received from Denver the first volume of the *Proceedings* of the Colorado Scientific Society. Denver as a western mining camp, with an evil reputation, and Denver the capital of the State of Colorado, are places separated by ages of civilisation; but mining is prominent in both. The members of the Scientific Society appear from the list to be mainly civil or mining engineers, metallurgists, geologists, assayers, &c., and the papers are largely on these subjects, *e.g.* the estimation of arsenic, and of copper; the ore deposits of the Summit districts of Rio Grande county, Colorado (the principal paper in the volume), löllingite, &c. There are, however, other papers: there is the report by a commission of the society on the Artesian wells of Denver, a paper on extinct glaciers of the San Juan mountains, while one of the members, Mr. van Diest, read several papers on subjects connected with the Malay Archipelago, such as the formation of hills by mineral springs in the Island of Java, the geology of the Sumatra, and the method of mining there 250 years ago, the methods of smelting employed by the Chinese at Banka, &c. There is certainly plenty of vitality in the new society, and doubtless it will grow with the growth and strengthen with the strength of the magnificent State from which it takes its name.

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus*) from India, presented by Mr. J. S. Stevens; two Turtle Doves (*Turtur communis*), European, presented by Mr. J. Hare; four Martinican Doves (*Zenaida martinicana*), a Moustache Ground Dove (*Geotrygon mystacea*), four Dominican Kestrels (*Tinnunculus dominicensis*), a Green Bittern (*Butorides virescens*) from the West Indies, presented by Dr. A. Boon, M.R.C.S.; a Golden Eagle (*Aquila chrysaetas*) from Perthshire, presented Mr. Chas. J. Wertheimer; two Larger Hill Mynahs (*Gracul. intermedia*) from India, presented by Mr. Thomas Hudson; an Indian Python (*Python molurus*) from India, presented by Mr. Harrington Laing; four Proteus (*Proteus anguinus*), European, presented by Mr. Cook; a Red-headed Cardinal (*Paroaria larvata*), a Yellow Hangnest (*Cassicus persicus*) from South America, deposited; a Vulpine Phalanger (*Phalangista vulpina*), two Snow Birds (*Junco hyemalis*), a Northern Mocking-bird (*Mimus polyglottus*), bred in the Gardens.

ASTRONOMICAL PHENOMENA FOR THE WEEK, 1885, AUGUST 9–15

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on August 9

Sun rises, 4h. 38m.; souths, 12h. 5m. 13·6s.; sets, 19h. 32m.; decl. on meridian, 15° 45′ N.: Sidereal Time at Sunset, 16h. 46m.

Moon (New on August 10) rises, 3h. 19m.; souths, 11h. 1m.; sets, 18h. 34m.; decl. on meridian, 15° 37′ N.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on meridian ° ′
Mercury ...	7 20 ...	13 45 ...	20 10 ...	4 13 N.
Venus ...	7 3 ...	13 47 ...	20 31 ...	7 55 N.
Mars ...	0 52 ...	9 12 ...	17 32 ...	23 48 N.
Jupiter ...	6 45 ...	13 34 ...	20 23 ...	8 48 N.
Saturn ...	0 57 ...	9 6 ...	17 15 ...	22 29 N.

August 9, 10, and 11.—Principal nights for observation of the August (Perseus) meteors.

August	h.	
12 ...	2 ...	Jupiter in conjunction with and 2° 30′ north of the Moon.
12 ...	9 ...	Mercury in conjunction with and 1° 55′ south of the Moon.
12 ...	12 ...	Venus in conjunction with and 2° 13′ north of the Moon.

DR. PERKIN ON THE COAL-TAR COLOURS[1]

Anthraquinone Series

I MUST now draw your attention to the important class of colouring matter compounds obtained from anthracene or anthraquinone.

Alizarin and the other colouring matters related to it form one of the most important branches of the coal-tar colouring industry, and is one of special interest, because alizarin was the first instance of the production of a natural colouring matter artificially. It will be quite unnecessary for me here to say much about the madder root, which was the original source of alizarin, and was grown in such enormous quantities, but now is nearly a thing of the past; nor will I enter into the early chemical history of alizarin, and all the laborious work which was bestowed upon it by Dr. Schunck and others. As you are probably all aware, the relationship of alizarin and its formation from the coal-tar hydrocarbon anthracene was the result of the labours of Graebe and Liebermann, the researches which culminated in this being of a purely scientific nature. The original process for obtaining it has, however, not been found of practical value, but a new one in which sulphuric acid could be used in place of bromine was afterwards discovered by Caro, Graebe, and Liebermann in Germany, and by myself in this country, apparently simultaneously. A second process was also discovered by me, which was worked nearly all the time I was engaged in this industry. In this dichloranthracene was used instead of anthraquinone, and the product thus obtained yielded colours of a brilliancy which it has been found, even to the present time, difficult to match by the anthraquinone process.

At the time of the discovery of artificial alizarin, anthracene

[1] The President's Address at the annual meeting of the Society of Chemical Industry (not the Institute of Chemistry as stated last week). Continued from p. 307.